

# Foreign direct investments in Romania in EU28 framework

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## Abstract

*Foreign direct investments flows are perceived by economic policymakers and by economic researchers as one of the key-determinants of the process of adjustment and structural modernization of emerging economies. They are also recognized in the economic literature as an important source of economic growth. This research aims to identify whether FDI can contribute to the economic growth of a country and to estimate whether the foreign investors are attracted to invest in economies that recorded successive growth rates. This approach involves the use of econometric tools and descriptive statistics to empirically support the assumptions made. Thus, for the quantitative analysis Eviews 7 and ArcGIS software tools were used. For the case study we analysed the Romanian economic situation in the current European context. First we take a look at the main evolution of foreign direct investment flows in the European Union. Subsequently we focus on the FDI flows into the Romanian economy and we test the links between these FDI flows and the economic growth process.*

**Keywords:** foreign direct investments, economic growth

## 1. Introduction. Foreign Direct Investments and economic growth

Foreign direct investments (FDI) have been seen and still are as one of the best solutions to transform the lagging economies. These flows are helping not only the acquisition of equipment and machinery, but they also facilitate the transfer of technology, knowledge and skills from the more advanced economies. Furthermore, investments can create a chain of positive externalities by imitation and competition increases, having a large effect on an entire region, not just a few companies.

According to the neoclassical theory of growth, foreign direct investments increase the capital and the production per person, but the effects are only temporary because of the assumption of diminishing marginal returns. Foreign direct investments through cash flows does not influence long-term growth rate but only income levels. FDI can influence the long-term economic growth in the neoclassical model only through technology or through employment growth, both exogenous (UN / ECE, 2001).

Optimistic authors state that the FDI effect on growth is also through diffusion of technology and by creating dynamic comparative advantages that can lead to technological progress (Borensztein et al., 1998). FDI accelerates economic growth by supporting human capital, a factor that Romer (1990) sees as essential in R&D sector. The flow of foreign capital plays a more important role in the endogenous growth theory.

On the other hand, pessimists state that FDI flows can have a negative effect when the profits generated by investments are repatriated (Reis, 2001). The financial flow from abroad can be less favorable than national investments, by the fact that multinational companies do not reinvest profits; they don't contribute to the budget accordingly; they do not develop close ties with local firms (Firebaugh, 1992). Also increased competition leads to removal from the market of the national companies.

Campos and Kinoshita (2002), Alvaro, Chanda, Kalemli-Ozcan and Sayek (2002), Carvalho, Geert and Ionara (2010) show that FDI strongly influences a country's economy through technology. But the technology transfer is related to the level of industrialization of the country that receives the FDI: the higher the level of industrialization is, the more innovation and knowledge from multinational companies is brought.

Using data on the Romanian economy for the period 1990-2010, Clipa et.al (2013) show that a 1% increase in the stock of FDI generates an increase in GDP by 0.10%. Moreover, FDI acts on the increase of the competitiveness of exports: an increase of 1 billion lei of the stock of FDI increases exports by 0.28 billion in the next year and by 0.56 billion euros in the long term. The authors also place the short-term growth on behalf of multinational's activities, and long-term performance on the complex effects of FDI over the economy, which

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acts after the multinationals leave the local economy: imitating the multinational companies by local ones and using the same infrastructure (transport, communications, financial services); transfer of technology to local companies; business networking between local and foreign firms.

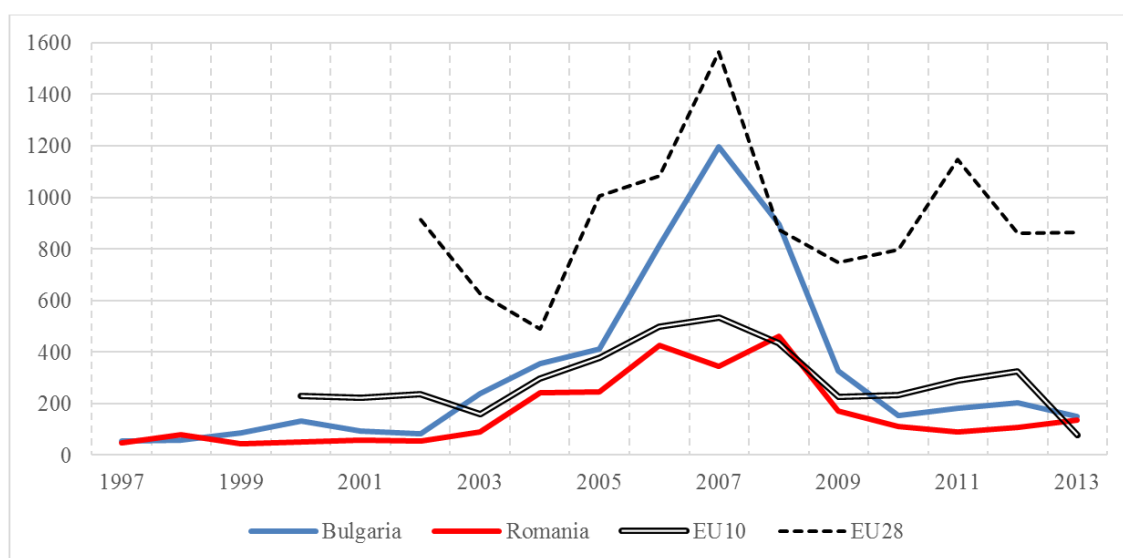
## 2. Romania's position in the European Union

The analysis covers the annual FDI flows and stocks in the 1997-2013 time period (2012 for the FDI stocks) for the 28 EU Member States. To provide the correct and comparable size of these indicators for each country, the values were divided by the population and annual gross domestic product.

As expected, the lowest values of the FDI stock in 1997 were located in the former communist states that had opened their doors to trade and investment only a few years earlier. FDI amounted to 98 euros per capita in Romania, 165€ (in 1998) in Bulgaria, 268€ in Lithuania, 315€ in Slovakia and 342€ in Poland. In the Czech Republic and Estonia the values for the same indicator were higher than 700€/inhabitant. For Croatia, Hungary and Slovenia there is no data on FDI stock. The highest values of FDI per capita were found in Luxembourg (€ 37.937 / inhabitant), the Netherlands (€ 7,414), Sweden (€ 4,260), the UK (€ 3,939) and France (€ 2,994).

In terms of FDI flows/capita the lowest values in 1997 were in Romania (47 euro / inhabitant), Bulgaria (53 €/ inhabitant), Italy (57 €/ inhabitant), Lithuania (87 €/ inhabitant), Czech Republic (€ 111/ inhabitant) and Poland (112 €/ inhabitant). As in the case of the FDI stock, the FDI flows values in East-European countries in 1997 are very small compared with those of states in north-central part of the European Union. The largest flows of FDI were in Sweden (1050 € / inhabitant), the Netherlands (€ 714/ inhabitant), the UK (€ 503/ inhabitant), Denmark (€ 469/ inhabitant), France (€ 378/ inhabitant). In the following years, until 2002, the lowest values of FDI were all in Romania and Bulgaria. Note that all the former communist states recorded the lowest flows of FDI in absolute terms. Those were joined by Greece, Italy and Portugal.

In 6 of the 17 years analyzed, the FDI per capita was the lowest in Romania, and in other six it had the second worst performance. To illustrate an overview of the European context we calculated the average value of FDI per capita in the European Union with 28 members. Then we calculated the average value of FDI per capita in the former communist countries, without Slovenia. The 10 countries included in the EU10 aggregation are: Bulgaria, Croatia, Czech Republic, Estonia, Latvia, Lithuania, Poland, Romania, Hungary, and Slovakia. As shown in Figure 1, FDI was much lower in former communist countries than the EU average. Romania's performance in all years was less than the average EU10 states.



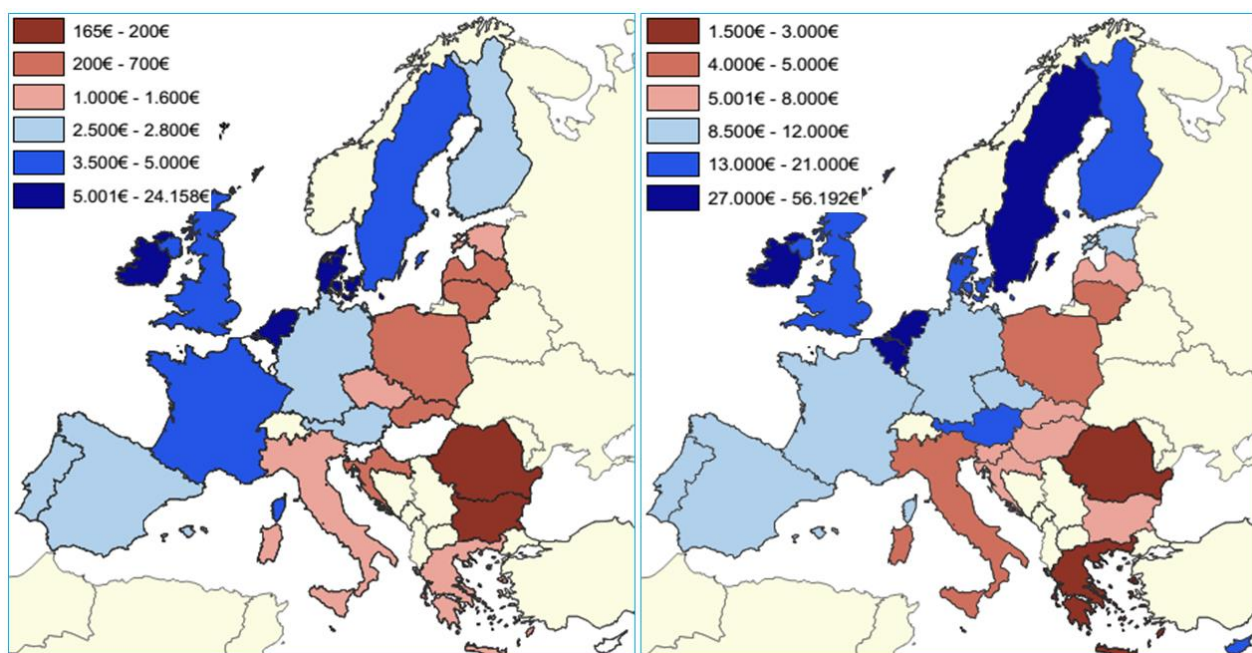
**Figure 1.** Evolution of foreign direct investment flows per inhabitant in Romania, Bulgaria, EU28, former communist countries (EU10<sup>1</sup>)

Source: own computation using data from Eurostat

<sup>1</sup> EU10 represents the aggregation of values for: Bulgaria, Croatia, Czech Republic, Estonia, Latvia, Lithuania, Poland, Romania, Hungary and Slovakia.

The evolution of Bulgaria's FDI flows was included in the analysis because it is the nearest to the economic performance of Romania and part of the same wave of EU enlargement. Bulgaria benefited from an influx of investment significantly higher than Romania. Moreover, from 2003 to 2009 FDI inflows relative to population in Bulgaria were higher than the average EU10 states. In 2005 was signed the Accession Treaty of Romania and Bulgaria to the European Union, boosting the interest of foreign companies for the two East European economies. But the changing trend in Romania was much lower than the explosive growth trend from the neighboring country. After this episode, the FDI flows reduced sharply in both countries in 2009, the year the financial crisis was felt.

According to the latest data, the foreign direct investment stock map has not changed significantly, due to the small flows in countries that already recorded low stocks of FDI per capita. In 2012 the lowest FDI stocks / capita were located in all countries belonging to the former communist bloc, plus Greece and Italy. The best performances are in the most developed countries of the UE28: Luxembourg, Ireland, Belgium, Sweden, Netherlands, Denmark and the UK. Thus, as can be seen in Figure 2, the foreign direct investment territorial pattern has not changed significantly in 2012 compared to 1998. In 2012, the FDI stock/ capita in Bulgaria was significantly higher (5153 € / capita) than in Romania (€ 2,932 / capita) due to the favorable evolution of Bulgaria.



**Figure 2.** The stock of foreign direct investments (euro per capita) in the European Union in 1998 (left) and 2012 (right)

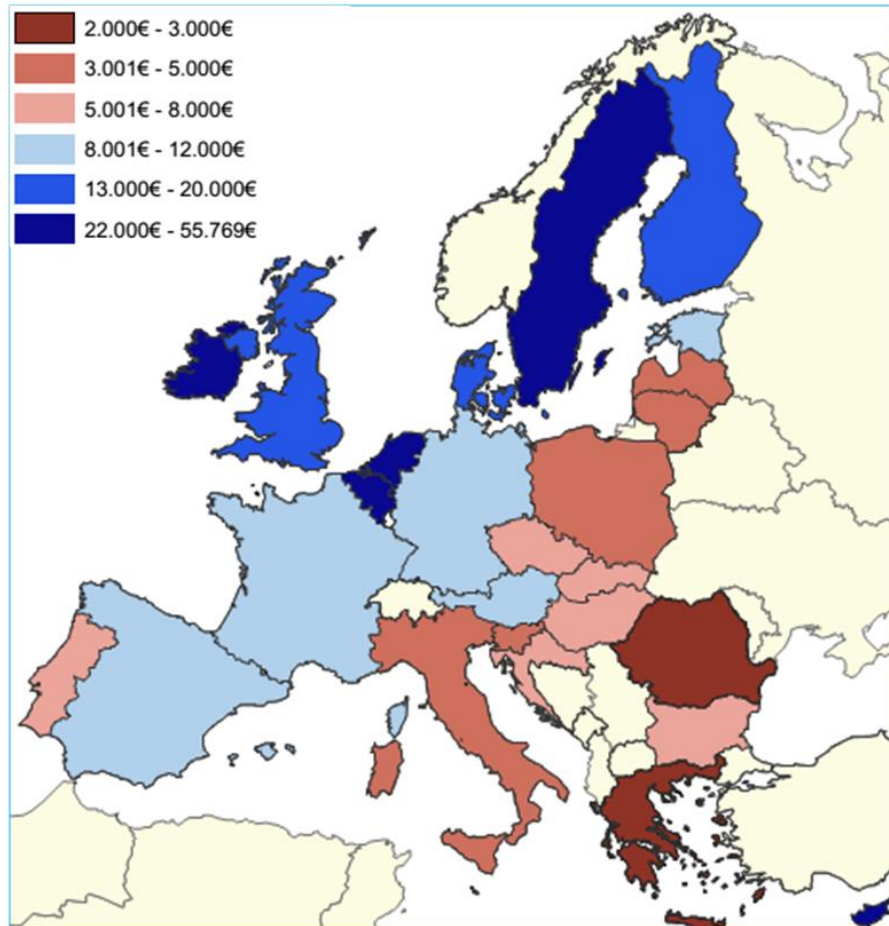
**Source:** own computation using data from Eurostat and ArcGIS software for mapping

The high coefficient of correlation (0.9) between the FDI stock and the GDP of EU countries, for all the 16 years analyzed shows that rich countries are those that have received the largest inflows of foreign capital. By adjusting the values with the number of inhabitants, the correlation is still positive but not as strong. Coefficient values vary between 0.62 and 0.84.

The analysis of the correlation between per capita FDI flows and stock of FDI per capita encounters a difficulty due to the fact that flows vary greatly from year to year while stocks fluctuate less, around an upward trend. This creates a higher fluctuation of the coefficients of correlation. Except for the years 2004 to 2006, correlation coefficients fluctuated between 0.7 and 0.93, demonstrating that large investment flows took place in states that already had accumulated a high FDI stock, ie developed countries.

A characteristic of countries in Eastern Europe is the high growth rate of FDI stock between 1997 and 2012. But this situation is mainly due to the low initial level of FDI stock in absolute terms (the lowest flows in the EU). By computing the correlation between the growth of FDI stock / capita and GDP / capita between 1998 and

2012<sup>2</sup> a direct link can be observed (correlation coefficient 0.74). This result shows that the countries that had the highest rates of economic growth have benefited from the highest rates of growth of the FDI stock. The least developed countries, the ones from the former communist bloc, also had the lowest levels of FDI / capita in 1998. In the following years, with the increase in production, an increased inflow of foreign direct investments has emerged. Changes in absolute terms of the two indicators are small, but relating to the initial level, the growth rates are above average. The lower the level in 1998, the higher the growth rate and vice versa. Noteworthy is the progress made by the Czech Republic and Estonia, countries that in 1998 had the highest per capita FDI stock from the former communist bloc and that have benefited from high growth rates.



**Figure 3.** Flows of foreign direct investment (euro per capita) in the European Union between 1998 and 2012\*

**Source:** own computation using data from Eurostat and ArcGIS software for mapping

**Note:** \*For Belgium, the flow covers 2002-2012 period, for Greece 2000-2012, Croatia 1999-2012, Hungary 1999-2012, Slovenia 2001-2012, Slovakia 2000-2012.

## 2.1. The influence of FDI on GDP

Econometric analysis aims to study the link between FDI and the economic growth process. It consists in the linear regressions between GDP and the stock of FDI in the 28 EU Member States, for the timeframe 1997-2012. In this analysis we will test the influence of FDI on GDP and subsequent, the influence of GDP on FDI. For both sets of data the growth rate was calculated using the standard formula:

$$R = \frac{X_t - X_{t-1}}{X_{t-1}} \quad (1)$$

where R is the growth rate;  $X_t$  is either GDP per capita (in euros) or the FDI stock per capita (in euros) in year t. The stock of foreign direct investment is less available so that after calculating the growth rate remain only 378 observations for analysis.

<sup>2</sup> Growth index is calculated as the ratio between the values of 2012 and 1998

The first set of regressions studies the FDI influence on economic performance. The regression equation is:

$$R_{GDP} = a_0 + a_1 r_{FDI} + e \quad (2)$$

where  $R_{GDP}$  represents the GDP growth rate,  $A_0$  is the interceptor;  $R_{FDI}$  is the growth rate of the stock of FDI per capita;  $a_1$  is the regression coefficient that assesses the extent in which the GDP growth rate evolves depending on the FDI stock rate of growth;  $e$  is the error term.

The lagged effects of FDI on economic performance were also studied. The reasoning is that the flow of investment does not only produce contemporary effects (in the same year) on production. A few years may pass between the onset of the investment project and the start of production. For example, building a factory and installing the equipment requires a huge financial effort and it may take a long time before that unit starts the production.

According to the results shown in Table 1, the influence of the FDI stock on GDP is quite high.  $A_1$  coefficient has a value of 0.167, which means that an increase of one percentage point (pp) in the growth rate of the stock of FDI per capita would lift the economic growth rates with 0.167 percentage points. T test (Student) illustrates the probability coefficient to be null. In our case, the coefficient is zero with the highest degree of significance of 0.1%.

The coefficient of determination  $R^2$  shows the extent in which the variation of the endogenous variable is due to variation of the exogenous variable. The value of 0.188 (ie 18.8%) is quite small but reasonable given the fact that the growth rate has many determinants, that are not included in the model.

These results show the contemporary influences, within the same year. Testing the time lag influences, it seems that on a one year lag the influence is stronger between the growth rate and the stock of FDI. The coefficient of the FDI stock growth rate from the previous year is higher than in the same year and the coefficient of determination is also higher. This shows that foreign direct investments have a greater impact on economic growth in the next year.

The influence is still statistically significant in the case in which the gap is increased to 2 or even 3 years. The growth rate of the FDI stock influences GDP growth rate after two years by 0.09 percentage points and 0.06 percentage points after three years. The value of the coefficient is lower than in contemporary influences or with a year gap, but also the coefficient of determination is much lower, of 5.5% for a two years gap and 2.8% for three years gap.

The FDI flows and stock are related, at least in theory, with the economic growth process. High growth rates signal higher business success and opportunities in that country, which attract the attention of foreign investors. The highest growth rates are found usually in developing countries that also have a low stock of foreign direct investment. Therefore the analysis continues with the study of the influence of the GDP growth rate on the growth rate of FDI.

The regression equation is similar to the previous one, the difference is that the endogenous variable is the growth rate of the FDI stock per capita ( $R_{ISD}$ ), and the exogenous variable is the growth rate of GDP per capita ( $R_{PIB}$ ):

$$R_{ISD} = a_0 + a_1 R_{PIB} + e \quad (3)$$

The results show that the influence of economic growth on foreign investments is very high. The 1.13 coefficient shows that an increase of one percentage point in the rate of GDP growth leads to an increase of 1.13 percentage points in the rate of growth of FDI stock. The coefficient higher than the one in the previous analysis is explained by the fact that FDI growth rate is much higher than GDP growth rate. The national average of the first indicator varies between 6% and 31 %, while the average growth rate of GDP per capita varies between 2% and 12 %.

At a lag of one year, the  $a_1$  coefficient and also the  $R_2$  coefficient have much lower values suggesting that the growth rate has a major effect on investment only in the same year. In a two-year lag the coefficient of determination is only 1.6%, and in the case of a three-year lag, the coefficient  $a_1$  is not statistically significant.

Table 1. Regression Results

The equation	$A_0$	$A_1$	$R^2$
$R_{PIB} = a_0 + a_1 R_{ISD} + e$	0.028095***	0.167038***	0.188820
$R_{PIB} = a_0 + a_1 R_{ISD}(-1) + e$	0.023921***	0.174710***	0.206611
$R_{PIB} = a_0 + a_1 R_{ISD}(-2) + e$	0.035170***	0.089318***	0.055381
$R_{PIB} = a_0 + a_1 R_{ISD}(-3) + e$	0.034110***	0.063330***	0.028733
$R_{ISD} = a_0 + a_1 R_{PIB} + e$	0.093064***	1.130399***	0.188820
$R_{ISD} = a_0 + a_1 R_{PIB}(-1) + e$	0.110411***	0.591177***	0.056647
$R_{ISD} = a_0 + a_1 R_{PIB}(-2) + e$	0.112778***	0.297715**	0.016304
$R_{ISD} = a_0 + a_1 R_{PIB}(-3) + e$	0.103683***	0.190481	0.007831

Significance levels: \*\*\* - 99%; \*\* - 95%.

## 2.2. FDI at regional level in Romania

Between 2006 and 2008 foreign capital flows in Romania have reached the highest level. The major privatizations and greenfield investments have been done in that period. The maximum was reached in 2008 when FDI flows were worth 9.5 billion euros. In the coming years, amid the economic downturn and completion of large privatization, the inflow of foreign capital registered a sharp decline. FDI inflows in the last four years (2010-2013), cumulated, represent less than the value of 2006 or 2008. The level in 2011 was the lowest of all the analyzed period, even lower than the one of 2003.

Even so, net FDI inflows in 11 years are totaling 50 billion euros. The stock of foreign direct investment in 2013 was equal to 42% of the country's gross domestic product. Divided by the number of inhabitants results a value of 2995 euro /capita (figure 4).

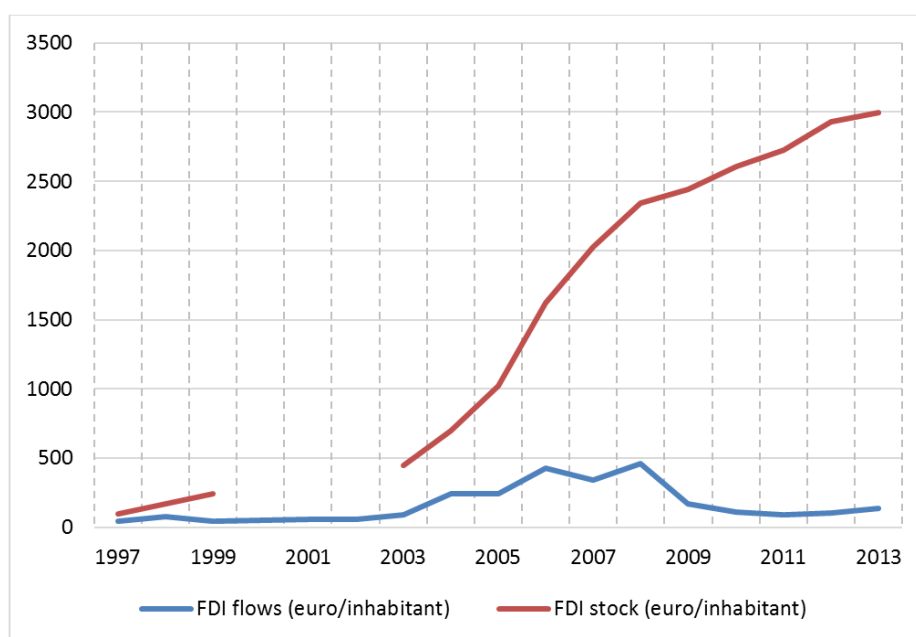


Figure 4. The dynamics of the FDI stock and flows in Romania between 1997 and 2013 (euro/inhabitant)

Source: Own calculation based on data from Eurostat

Almost half (48%) of the FDI stock is located in the industrial sector, especially in the manufacturing industry (31%). The best represented sectors are petroleum, chemicals, rubber and plastic products (5.9 percent of total FDI), the transport industry (5.7 percent), metallurgy (4.1 percent), food, beverages and tobacco (4.0 percent) and cement, glass, ceramics (2.7 percent).



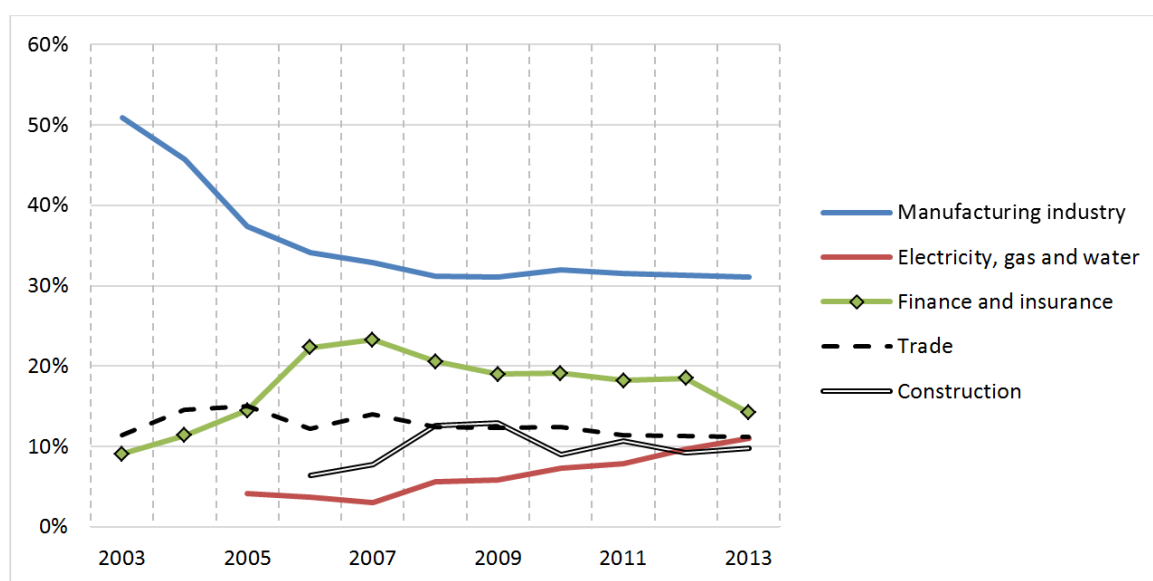
Other sectors which attracted foreign investment are financial intermediation and insurances (14.2 percent of total FDI), wholesale and retail trade (11.2 percent), construction and real estate (9.8 percent), information technology and communications (6.9 percent).

The tertiary trend of the Romanian economy can be observed. The share of FDI stock in manufacturing decreased from 51 % in 2003 to 31% in 2013.

In the secondary sector, the *electrical energy, gas and water* sector expands amid the investments of foreign companies in the renewable energy, but also in the conventional energy.

Since 2004, foreigners' interest is moving on trade activities, financial intermediation and insurances (which engaged in 2007 23% of the FDI stock in the country), and construction (especially in 2008 and 2009). Figure 5 illustrates just a few activities of the national economy, as between 2007 and 2008 the methodology changes, using NACE Rev. 2 classification.

The shifting of investors' interest towards these sectors is motivated by the possibility of quick recovery of investments, high profits, or it represents strategic areas (renewable energy production) (Scutaru, 2014).



**Figure 5.** The distribution of foreign direct investment in manufacturing, energy, trade, construction and financial intermediation and insurance.

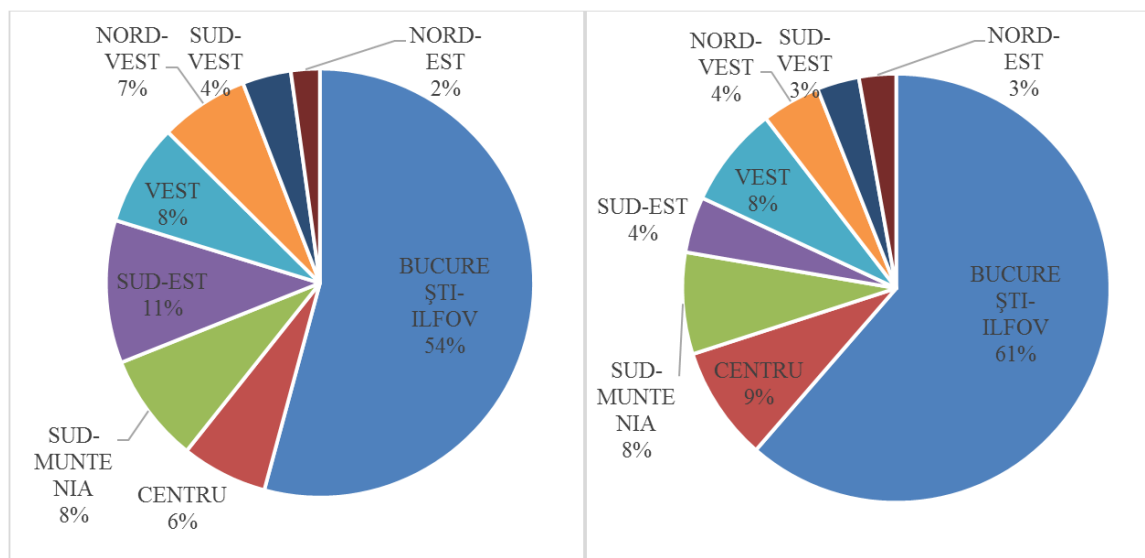
Source: own calculations based on data from National Bank of Romania

Given the importance of foreign capital for economic development, regional growth analysis should treat the extent to which subnational economic performance is linked to foreign direct investment.

When analyzing the distribution of foreign direct investments in the country's regions it must be taken into account a methodological aspect of data collection. Assigning the FDI to a region or other is done taking in consideration the location of the main office (headquarters) of the receiving company, which does not always correspond with the actual location of their economic activity.

Analyzing the evolution of regional allocation of FDI between 2003 and 2013 reveals that during the last decade București -Ilfov region consolidated its leadership position in attracting foreign capital.

The share of total national FDI stock increased from 54 % in 2003 to 61% in 2013. Investment flows larger than the national average were also headed to the Centru region (up from 6% to 9%) and Nord Est (up from 2% to 3 %). Disparities in terms of ability to attract foreign investors have as causes economic decline of small and medium size towns, and as well the severe impact of the economic restructuring of mono-industrial areas (Goschin et al, 2013).



**Figure 6.** Distribution of FDI by region at 31 December 2003 (left) and December 31, 2013 (right)

Source: own calculations based on data from National Bank of Romania

According to Reschenhofer et al (2012), investment and regional GDP per capita are important determinants of attracting foreign capital. Many studies indicate that the market size is what weighs heaviest in the decision to locate the company and immediately after the population size, GDP per capita is a way to illustrate this feature.

Driffield and Munday (2000) stated that agglomerations attract investments, both domestic and foreign, due to lower costs of production (economies of agglomeration) and positive externalities. Infrastructure and connectivity is another reason for the decision to invest in big cities, generally better endowed in this respect than small towns.

Goschin et al (2013) study the determinants of FDI accumulation at regional level in Romania for the time period 2001-2008. The results of the econometric analysis show that the stock of FDI is positively related to foreign and domestic investments. Thus, the regions that have achieved the critical investments level, are the ones that are attracting more investment.

This result is attributed to economies of agglomeration. The authors also found that GDP per capita (indicator of economic development but also of market size) and the population density attract a greater flow of investment. This demonstrates that agglomerations are attracting investor interest.

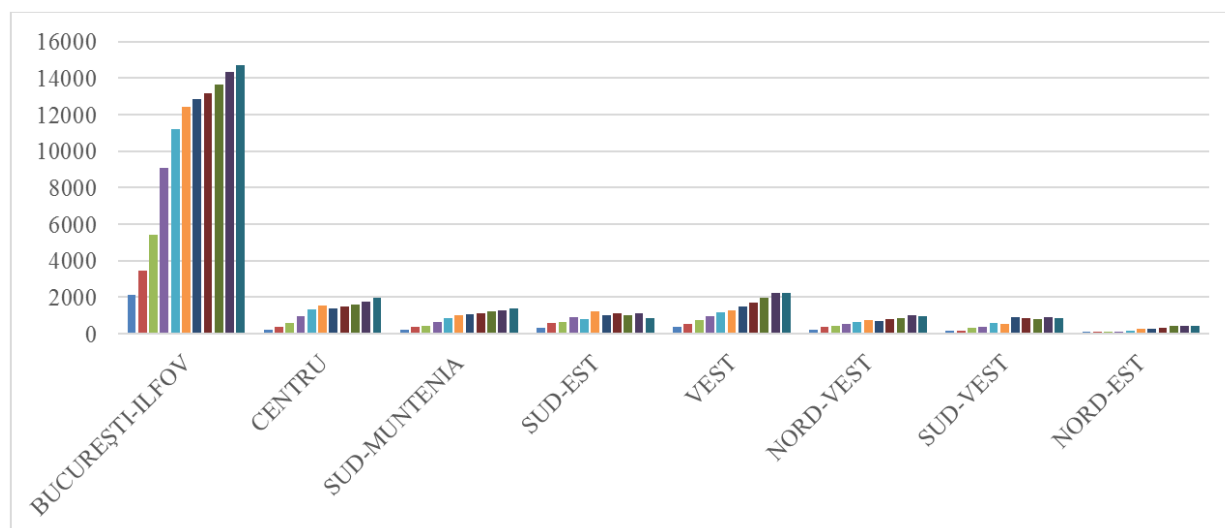
Goschin et al (2013) show that another determinant of FDI is the technological level of the region: the FDI is higher in areas with high employment in activities intensive in knowledge while employment in sectors that are weak technologized negatively affect the flow foreign capital.

The concentration of foreign direct investments in the capital region shows that they act as a driving factor of the growing disparities. According to Zaman et al. (2011) the decision of choosing this location depends on the attractiveness of the business environment and the infrastructure.

In 2013 most greenfield investments are also in București-Ilfov (55.6 % according to the National Bank of Romania) though the expectations would be that in this region the FDI to be accumulated in other types of investment since here is the largest cluster of companies built before 1990.

Given the fact that the developing regions are different in size in terms of territory and population, a useful methodological approach is to report the FDI stock to the the number of inhabitants. This highlights more clearly the trends of agglomeration of FDI in the capital region (figure 7).





**Figure 7.** Foreign direct investment stocks between 2003 and 2013 (euro per inhabitant)

**Source:** own calculations based on data from National Bank of Romania

One of the reasons given for FDI flows to countries in Southeast Europe is the low salary levels. Goschin et al (2013) show the existence of a negative relationship, statistically significant, between the FDI and wage levels, which indicates that foreign investors are targeting locations with low labor costs. However, investment flows were much higher in București-Ilfov, region in which the wages were the highest in the country throughout the period studied. This shows that wage differences, which can be of 2:1, do not compensate for other characteristics sought by foreign companies.

At the county level, Danciu et al (2010) found a strong direct link between the per capita values of GDP and foreign capital and the number of companies with foreign participation. Foreign direct investments tend to concentrate in the most developed areas, the same where most companies are found. This reinforces the status of attraction poles of large cities, contributing to increasing the development gap between the regions of the country.

### 3. Conclusions

The impact of FDI on economic growth has been widely studied, many authors indicating their positive influence not only by a temporarily increase of production, but by the complex effects on the economy: the transfer of technology and knowledge from more advanced countries causes positive externalities.

The lowest values of the FDI stock in 1997 were found in the former communist states that only a few years earlier had opened their doors to trade and investment. The territorial pattern is the same in the case of FDI flows: the lowest values were found in developing countries and the largest in north central Europe, in countries with the highest level of economic development.

According to the latest available data, the lowest FDI stocks per capita are found in the former communist countries, plus Greece and Italy. A characteristic of Eastern Europe countries is the high growth rate of FDI stock between 1997 and 2012. But this situation is mainly due to low initial level of stock of FDI, in absolute terms the flows being the lowest in the EU. These countries also had the lowest levels of FDI/capita in 1998. In the following years, when production increased, also the inflow of foreign direct investments increased.

The results of the econometric analysis show that the influence of FDI stock on GDP is quite high both in the same year and one year later. An increase of one percentage point (pp) of the growth rate of the FDI stock per capita increases the economic growth rate with 0.167 percentage points that year and 0.174 pp a year later. Growing the time lag, the positive influence is still present but much weaker.

We also tested the hypothesis that high economic growth rate attracts foreign capital. The results show that the influence of economic growth on foreign investments is very high. An increase by one percentage point of GDP growth rate determines an increase of 1.13 percentage points in the rate of growth of FDI stock. The

coefficient higher than the one in the previous analysis is explained by the fact that FDI growth rate is much higher than GDP growth rate.

In European context, Romania's performance was weaker in all the years analyzed than the average of the former communist countries. In 6 of the 17 years analyzed, the FDI flows per capita were the lowest in Romania and in other six it had the second worst performance.

The flow of foreign direct investment in Romania reached high levels between 2004 and 2008, when the major privatizations and greenfield investments took place. Maximum was reached in 2008 when FDI flows worth 9.5 billion euros. In the coming years, amid the economic downturn and the completion of large privatizations, the inflow of foreign capital registered a sharp decline.

The tertiary trend of the Romanian economy can be observed from the stock of foreign direct investment. Since 2004, foreigners' interest moved on trade, financial intermediation and insurance (which engaged in 2007 23% of the country's FDI stock), and construction (especially in 2008 and 2009).

The Capital region holds a leading position in terms of attracting foreign capital. 61% of the national FDI stock is found in București-Ilfov. The next positions are held by the Centru, Vest and Sud-Muntenia regions. The least attractive areas for investors are Nord Est, Sud Vest and Sud Est. It thus appears that the regional pattern of FDI stock is very similar to the economic development of the central western and eastern, which is more favored than the east and southeast of the country.

Bucharest, alongside major cities have the highest FDI stock, although wages in these locations are the highest in the country. This shows that wage differences between regions do not compensate for the other characteristics sought by foreign companies. According to several authors, foreign capital tends to accumulate in clusters due to similar reasons for all companies that choose to locate here: the large size of markets and labor resources, infrastructure and connectivity, lower production costs (low wages compared to the developed countries), economies of agglomeration. Studies on the Romanian economy show that other determinants of FDI flows are the education and skills of the population, and previous investments (investments attract investments).

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